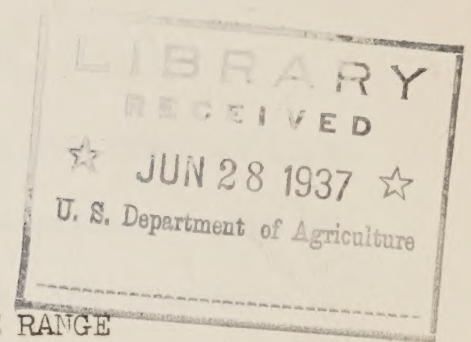


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IRRIGATION AND THE CONSERVATION OF THE RANGE

By

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## IRRIGATION AND THE CONSERVATION OF THE RANGE

### Objective

The purpose of a range is to provide grazing for domestic livestock, and in some instances for wild animals. The primary object of the conservation of the grazing area is to stabilize the livestock industry and insure the permanency of the range. As one means of increasing the utility of the range, irrigation in one form or another is employed.

### Definitions and limitations

The "range" as here used signifies a region where cattle, horses, or sheep (including wild animals) may pasture. "Conservation" signifies the use of the range under such conditions as will preserve and maintain it in what may be termed essentially its original condition. In other words, conservation presumes official keeping and guardianship, but does not signify the prohibition of its use. "Irrigation" as herein used includes all methods and means for applying water to or diverting water upon land by human effort, for the purpose of producing and maintaining plant life.

An attempt to lay down a specific program for range conservation and irrigation would be futile, unless such program were expressed in the most general terms. The range land of the arid and semi-arid region varies from the semi-humid to the desert areas, from points below sea level to heights of 10,000 feet or more, from level or gently-sloping to lands that are rough and steep, from regions subjected to temperatures of 60 degrees below zero to areas having

Abstract

The purpose of a review is to provide a summary of the literature on a subject, and to indicate the current status of the field. The review should be written in a clear and concise manner, and should be based on a thorough knowledge of the literature. The review should also indicate the strengths and weaknesses of the literature, and should provide a basis for further research.

Introduction and Background

The "Review" is a form of literature that is used to summarize the current state of knowledge on a particular subject. It is a form of literature that is used to provide a summary of the literature on a particular subject, and to indicate the current status of the field. The review should be written in a clear and concise manner, and should be based on a thorough knowledge of the literature. The review should also indicate the strengths and weaknesses of the literature, and should provide a basis for further research.

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temperatures of 140 degrees above zero, from a 4-month growing period to a 12-month season; from the North slope to the South slope in the mountain areas, and to the Plains East of the Rockies. There are, however, a few principles that apply equally to any region.

Nearly all life -- human, animal, and plant -- depends for its sustenance upon air, food, and water. Of these three essentials, water is the scarcest in the western part of the United States, and consequently the controlling factor in food production. The whole industry of the arid region is built around and must be limited by the water supply. Our problem thus resolves itself into the utilization of the water supply for the greatest good to the greatest number, and the question of land-use becomes in a measure secondary to that of water-use.

In the planning of range conservation and irrigation, there are two aspects of the question that must be given full consideration. There are (a) the principle of long-time use planning, keeping in view the greatest good to the greatest number, and (b) the immediate aspect and the individual human benefit that cannot be divorced from the picture. In other words, we cannot disregard the immediate future in planning for the ultimate future. Neither can we place too much emphasis on the academic planning, unless we first give serious and justified consideration to the practical application and consummation of the plan.

In considering the utilization of our water supply for the conservation of the range and for irrigation, we must be ever mindful that the problem is dynamic and not static. Changes have occurred in the past and will continue to occur as a result of changing economic conditions. Changes in climatic conditions are also important. It must be

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kept in mind that there may be a more important use of water than for aiding in the maintenance of the range, and even for irrigation. Water is demanded for municipalities, for industries, for farming, for grazing, for wild life, and for recreation. In nearly every State a preferential right to the use of water is specified, the first right being that of human consumption, then agriculture, then industry, etc. But a force even greater than these legal restrictions develops in the economic conditions resulting usually from increased population, increased industrial activity, and other uses which can afford more for water than the range or farming can pay.

We have numerous examples illustrating the changes that have taken place in grazing areas. These changes result from the shifts of economic conditions. Examples with which you are all more or less familiar are those of the Miller and Lux lands in the San Joaquin Valley and other parts of California, and the Miller and Lux C. O. I. lands in Oregon and in many other places. Increased taxes, the inclusion of the one-time grazing lands within irrigation, school, road and other districts, required a greater income from these lands than was afforded by grazing; hence, their sub-division and sale for farming lands, or, in some instances, their abandonment by the original holders because of non-ability to pay taxes.

Frequently changes in the availability of water or better knowledge of limitations due to water supply necessitate changes in social relationships and activities. For instance, it is proposed for portions of the drought area that the plowed land, in part at least, shall be restored to grass and used for grazing. Such a change





in use would occasion a reshaping of school and rural districts and the abandonment of settlements in some areas, with the corresponding readjustment in other sections to which the affected population had moved.

In what has preceded an attempt has been made to visualize the question many of you are now asking. In what ways are range conservation and irrigation interdependent? In the range areas of the West the problem has been stated, how many acres (10, 40, or even 100) of range land is necessary to maintain one animal? But, in the irrigated section the question is asked quite differently -- one acre of irrigated land will support how many animals? On the range, for the most part, there is a time of the year in which the animals cannot be grazed, and fodder must be provided from some source to maintain them during this period. Under the Taylor Grazing Act, and the Forest Service regulations, one of the limiting factors to the number of animals that may be grazed is the amount of feed the applicant produces for the "winter carry over." This feed in the West is grown for the most part under irrigation. In years of unusual drought, such as 1934 and 1936, there was practically no feed produced on the ranges in several regions, and it was necessary to dispose of the animals or to move them where feed could be found. This meant usually moving the animals to an irrigated area. There is a limit in the distance to which animals can be moved with profit, and there is a limit to the distance to which feed can be moved. It naturally follows that to make the best use of the range it is desirable to have feed available within a reasonable distance of the range. Likewise, in order to enhance the carrying





capacity of the range it is necessary to increase the amount of feed the range is now producing. While it is possible to do this only in a limited way, yet the few illustrations that follow will indicate how potent may be this possibility.

The report of the North Dakota State Planning Board for 1937 states: "It has been shown that the predominant industry in western North Dakota has been and must continue to be a combination of livestock raising and grain farming. Throughout this area are found tracts of land that are unfit for cultivation because of topography or unfavorable soil, but which produce native grasses that are exceptionally nutritious and palatable for livestock. These tracts make excellent summer pastures. Winter feed, however, must be produced by cultivation in most places in western North Dakota. The difficulty of providing adequate winter supplies of feed has been one of the major problems of the area.

"In 1934, because of inadequate feed supplies and ruinous market prices, the Federal Government purchased a total of 960,000 cattle and calves of beef and dairy stock in North Dakota. The normal number of cattle and calves in the State is given in the Census as approximately 1,300,000."

Quoting further, "In 1936 the entire (Lower Yellowstone) project comprising 43,111 acres produced 27,491 tons of hay plus approximately 14,000 tons of additional feed which consisted of sugar beet tops, straw and miscellaneous roughage. It is probable that the total feed production in 1936 from dry land farming in western North Dakota did not equal this quantity."

Here we have a picture, first of an area unirrigated that in

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the transparency and accountability of the organization. The document then outlines the specific procedures for recording transactions, including the use of standardized forms and the requirement for double-checking entries. It also mentions the importance of regular audits to ensure the accuracy of the records.

The second part of the document focuses on the financial management of the organization. It discusses the various sources of income and the methods for allocating funds to different departments. The document also addresses the issue of budgeting and the need for regular financial reviews. It mentions the importance of maintaining a clear understanding of the organization's financial position at all times.

The third part of the document deals with the personnel management of the organization. It discusses the various roles and responsibilities of the staff and the methods for recruiting and selecting new employees. The document also addresses the issue of training and development, emphasizing the importance of providing ongoing education and training for all staff members. It mentions the importance of maintaining a positive and productive work environment.

The fourth part of the document discusses the legal and regulatory requirements of the organization. It mentions the various laws and regulations that the organization must comply with and the methods for ensuring compliance. It also discusses the importance of maintaining accurate records of all legal and regulatory activities.

The fifth part of the document discusses the overall management of the organization. It mentions the various responsibilities of the management team and the methods for ensuring the effective operation of the organization. It also discusses the importance of maintaining a clear vision and mission statement for the organization.



one year of extreme drought suffered a loss of over 70 percent of its cattle and calves, and in the similar drought two years later the feed raised on less than 43,000 acres of irrigated land exceeded the feed produced in the entire western part of the State of North Dakota.

Range management and irrigation agriculture are closely related in much of the West; yet the livestock grower has often looked askance at the prospect of farming land intensively. He knows that it must be done for his own good; but is willing and anxious to leave that occupation to someone else. In common parlance, he prefers to "farm on horseback." So we find various communities in which the livestock growers have engaged in irrigation farming as a sort of necessary evil, to provide the feed which they need to supplement the range.

Kanab, Utah, with its limited agriculture centering around and absolutely subordinate to the dominant livestock industry, typifies such a situation. Some 20 years ago it was substantially a frontier cattle and sheep town; the people were old-time stockmen, to whom living was easy when the livestock business was good. Farming was subsidiary to livestock production, the irrigated alfalfa being raised principally for the saddle horses. When the livestock business declined the people took to temporary labor to keep living, rather than to extension or improvement of irrigation farming. Inquiries in the summer of 1934 disclosed some 2,000 range cattle, 15,000 sheep, 156 dairy cows, 38 pigs, and a few goats. About 900 acres were being irrigated, 75 percent alfalfa, 15 percent grain, and 10 percent fruit and vegetables. There was considerable privately-owned range, in



addition to the Government lands.

By 1934, the complexion of Kanab had changed completely from what it had been 20 years previous. Due to the decline in the livestock business, and to location of the community on the highway to Grand Canyon, Kanab had become in large part a tourist and laboring town. Of a total of some 265 families, it was estimated that 65 to 80 were dependent mainly upon livestock for their livelihood, 10 to 12 upon mercantile businesses, and the balance upon day labor. The community normally raised most of its feed. It exported cattle, lambs, wool, and a small amount of cream and vegetables, and in their place imported most of its fruit and eggs, more than half of the dairy products consumed, some vegetables, all of the flour, and large quantities of groceries and other commodities.

Many other examples of the relationship between livestock production and irrigation agriculture might be cited. The Vale irrigated area in eastern Oregon is a typical area in which an irrigation project supplements the ranging of livestock. In Colorado and western Nebraska, as elsewhere, feeding of livestock is an essential part of the irrigation project economy.

Considering entire States in which agriculture is largely built around the livestock industry, Utah and Nevada may be cited.

In Utah mining and agriculture are the dominant industries; agriculture serves the mining population and some export trade, but principally produces feed for animals. About 85 percent of the State is range land, including 5 million acres of timberland mostly used for grazing. About 60 percent of the total crop area of the





State is in hay, principally alfalfa; nearly one-third in grain, the largest part being wheat; about 5 percent sugar beets and potatoes; and 2 or 3 percent vegetables and fruits. It is no exaggeration to say that the populous centers of that State would be far less impressive than they now are, if it were not for the one and one-third million acres of irrigated land, the chief function of which is to raise feed crops.

Nevada's agriculture is so dominantly livestock that the Legislature has enacted a stock-watering law, under which rights for watering range livestock are measured according to the number and kind of animals watered, instead of in acre-feet. The State Engineer may reject an application for water along the course of or close to a customary driving route between ranges, even if no previous stock-watering rights exist, if he determines that the public interests will be best served by reserving such water for livestock enroute. This puts stock-watering rights in a preferential position with reference to other rights.

#### What is proposed in the conservation of the range by irrigation

In considering the rehabilitation and conservation of the range from the standpoint of water requirements, there are too few experimental data upon which to base more than the most general conclusions. Where the native grasses are still predominant and sufficiently plentiful not to require reseeding, nature has probably made the right selection from the water requirement standpoint. However, in areas where reseeding is necessary it is important to know the grasses that are best adapted to the natural conditions.





In those limited areas where supplemental water can be applied, a different seeding is probably advisable from the requirements of lands dependent wholly upon the natural rainfall. One of the necessities in connection with range conservation, therefore, is some worthwhile work on water requirements of native and other grasses and plants for the limited portion of the range susceptible of irrigation. Many of the grasses are shallow-rooted and dry out early in the season. A few plants are deep-rooted and are green late in the season. The more shallow-rooted plants require a different irrigation treatment than those deep-rooted. Because the moisture supply in the soil is the limiting factor in the growth of forage throughout the range area, accurate knowledge of the depth from which and the time at which the different grasses remove soil moisture is essential to the correct choice of varieties for planting. It is believed that a range experiment station, devoted in substantial part to water requirements of grasses and other plants suitable for the range, would be a most profitable investment.

The conditions in Baker County, Oregon, are of interest here. The stockmen own and operate the irrigated hay lands in the river bottoms. These hay lands are used for pasture in the fall and it is the quantity of this fall pasture that is now the factor limiting the number of livestock in the county. By bringing the stock in off the range in the fall, the range grasses are given an opportunity to start after the fall rains and thus go into the winter with a much better chance of surviving; true range conservation.

There are two major possibilities for the employment of



irrigation in the conservation of the range. First, there is the irrigation of the range itself, which of necessity would be very limited in extent as well as spotted in most regions. The second possibility -- and we might say necessity -- is the creation of more irrigation units to be coordinated with the utilization of the contiguous range.

In the first possibility there is little likelihood of there being anything spectacular since the works to be constructed would be of minor <sup>engineering</sup> importance, although in the aggregate the increased fodder production may be in many areas most significant.

For instance, there are many areas where flood water flowing down broad valleys or coulees can be diverted, and the water so diverted let flow where it will, or directed by inexpensive and usually short ditches over bottom lands adjacent to the streams. The areas that lend themselves best to this type of development are those in which there is relatively little fall to the lands or to the stream. On the Plains Area, an excellent example of this type of irrigation is to be found on the Souris River in north-central North Dakota. There are numerous instances throughout the West in areas, which for the most part will probably always be used for grazing, where this practice could be effected and the amount of fodder greatly increased. In years when the range affords ample pasturage, these flooded areas could be cut for hay and thus build up a reserve of feed for years of drought.

In many mountain valleys, especially in the upper parts of the watershed, it is possible that the diversion of flood water on to less steep grazing areas would serve a double purpose by increasing





the fodder growth and reducing the spring run-off of water. There are also many upland meadows where improvement could be made in the fodder production, through a limited amount of drainage coupled with the diversion of water from the natural channel around the edges of these meadows. Some of the small upland lakes could be made into reservoirs, and their waters released later in the season for irrigating the upland pastures. The water from springs likewise could be distributed, and while the total area so covered with water might not be great, yet one acre of partially irrigated land would produce many times the amount of fodder grown on one acre of non-irrigated range. Some of these upland reservoirs, when so constructed, might be utilized to develop a small irrigation unit within the grazing area itself. In some parts of the range water holes and small reservoirs for stock-watering purposes could be constructed, and when properly located throughout the area would tend to prevent over-grazing of areas immediately contiguous to springs, running streams, or the occasional water hole.

In some areas, such, for instance, as in parts of Nevada, the Great Plains, and elsewhere, there is to be found underground water, which may be pumped and used either for the irrigation of limited areas of land, or for the creation of facilities for stock-watering. While some of these developments, especially those involving underground water, may within themselves seem prohibitive in cost, yet when considered in conjunction with the range they may be found entirely economically justifiable. I often recall an incident that happened some years ago when a stockman called at my office in Berkeley, seeking our assistance in designing a pumping layout to



irrigate some 40 acres of land in the High Sierra which was to be seeded to alfalfa. The pump lift was to be about 140 feet. My immediate reaction was that the lift was too great, and consequently the cost of producing hay beyond the economic limit. But this sheepman soon convinced me that it was much cheaper to pump water 130 feet to grow the small amount of feed necessary to carry his flock over, than to ship the sheep out or ship hay in at \$30 per ton.

However, the principal place of irrigation on the conservation of the range is its practice in a truly irrigated area. Neither the stockman nor the dry farmer adapts himself readily to irrigation farming, as is indicated elsewhere in this paper. The irrigation unit provides fodder for the range stock, not alone to carry them through the winter and through drought periods, but to provide both hay and grain for the fattening of animals for the market. The range animals afford the irrigation farmer a market for at least a part of his produce.

In our recent survey of the San Luis Valley in Colorado, which was originally and entirely a livestock country, we found that out of some 600,000 acres of irrigated land about 283,000 acres were in wild hay and pasture, and, further, that this wild hay and pasture is irrigated almost entirely with flood water. But it is irrigated.

One phase of range maintenance and conservation that has been more or less disregarded is one we generally speak of as supplemental irrigation. The fact that this has been largely neglected may be attributed to the antipathy of the stockmen toward farming, even to the extent of raising a family garden. "Supplemental irrigation" as here used includes providing water with which to maintain the family





garden and orchard, the raising of sufficient fodder for the family flock and herd, a few pigs, and the work stock. With such an irrigation layout the family is assured, even in times of extreme drought or some other range disaster, of sufficient food for themselves and feed for the operating livestock and poultry. It can be, and often is, a source of considerable income and, of course, most valuable when prices for range stock are low or when for any other reason the profits from the range are lessened. This type of irrigation in conjunction with the range should be given much greater consideration in the future planning than it has received in the past.

It is not to be understood that any of the above practices can be entered into promiscuously, nor should the building of small diversion dams be undertaken or permitted in connection with the development of a range, until due consideration has been given to the relation of the particular dam to other developments within the range. There are instances where too many diverting dams have been constructed with improper guidance in their building, and too many small reservoirs have been constructed in too steep ravines or canyons and in dry washes. Mere storing of water in ponds without some definite use of the water so stored is not true conservation. In some areas large numbers of dams have been constructed with no means of utilizing the water, which is simply allowed to evaporate. The conservation of the range presupposes coordinated planning, and that is essential in any development.

It may be of sufficient interest here to indicate what North Dakota is doing in the rehabilitation of the agriculture in its drought area. As was previously stated, the western part of the



State is devoted almost entirely to stock raising and dry farming, both of which have been almost wiped out during the past four or five years of excessive drought. The last Legislature of the State created a Water Conservation Commission and made available to them \$112,500 for the next two years to lend for the purposes of irrigation. The Bank of North Dakota made available \$50,000 for the same purpose. With the thought that the irrigation projects in mind would serve as demonstrations, the bank loans are limited to \$1,000 and apply to areas of not more than 40 acres each. In the discussions and deliberations incident to the inauguration of this program, there was always brought out the coordination of this irrigation development and the livestock industry.

I have indicated in the opening part of this paper that the range as it now exists is not stable, and I wish to call to your attention another particular in which there is liability of a change in our present grazing privileges on the range. In the arid region we must admit that the greatest natural resource is water. Therefore, anything that affects the water yield, either in quantity or in seasonable yield, has its effect upon the value of that natural resource. In most of the West the area from which water is derived for all purposes is the watershed, usually in the high mountains. Therefore, the proper use or the abuse of this area is of vital importance to the water user, and I venture the statement that it will not be long until the water user demands and insists upon a voice in the control and use of the watershed. This means a voice in the control of grazing. In some few areas already the water users have acquired title to the lands of the watershed. In





others they have gone so far as to demand the discontinuance of some practice or practices that interfered with vested water rights. However, I do not see in this regulation of the use of the watershed anything especially antagonistic to the conservation of the area as a range for livestock, but it would certainly preclude the abuse of the grazing privilege.

Since irrigation is so essential to range conservation, it would seem necessary to consider briefly the conditions under which the right to use water for this purpose may be acquired by public and other agencies even upon the public domain. In the past year we have had occasion to investigate the extent to which and the conditions under which the Federal Government may acquire the right to use water on the public domain or elsewhere, and the extent of the right which is inherent in the Federal Government. In some cases, the assumption has prevailed that the Federal Government had the right to make any use it saw fit of the public domain and of the water it found thereon or flowing through or past such public domain. It is believed that a brief statement of our findings and conclusions will be of interest and value, and for that reason they follow.

#### Right of the Federal Government to protect the public domain

Congress is vested by the Constitution with supervision and control of the public lands and has authority to make all needful rules and regulations to protect them from damage. Measures taken to carry this authority into effect are not subject to State or local laws or control.



As owner of the public domain, the United States has proprietary rights; in addition, it is the sovereign. The Federal Government, as trustee for the whole people, may go far under the police power to protect those lands.

The police power is wide in scope, but it is not unlimited. Inconvenience or even damage to an individual proprietor of land, in protecting the public domain, is within the scope of the police power. But an act which results in depriving an appropriator of water to which he has acquired a valid right, and which as a consequence substantially and permanently decreases the value of the land to which the right is appurtenant, is not a legitimate exercise of the police power unless compensation for the injury is provided.

Right of the United States to impound and divert water on the public domain

The United States Supreme Court has held that the United States, as sole owner of public land prior to the formation of the public-land States, reserved certain waters thereon for its own purposes. Such purposes include the control of navigation, the use of water for lands bordering a stream for the beneficial needs of Government property, and the use of water for Indians on reservations. Furthermore, Congress has authorized the construction of reservoirs on the public domain by individuals for stock-watering purposes. However, there are many ramifications to this subject, and there are still many unsettled questions concerning reservations of water by the United States. It is not safe to assume that an implied reservation of water now desired by some Federal agency, but not specifically





mentioned in a Congressional Act or heretofore defined by the courts, would be upheld.

Of course the United States may appropriate any unappropriated or unreserved waters, just as an individual may do. It is an open question as to whether a Federal agency must make such appropriation through State officials, if Congress has not required it, or may simply impound and divert the water.

Waters held to have been reserved by the United States can be put to use by individuals only pending the time when the Federal Government decides to use them. But rights acquired by individuals to waters not thus reserved become superior to any subsequent appropriation for Government purposes. If the Government requires such waters the rights to which have become vested in individuals, it must acquire them under the police power or the power of eminent domain.

Under the police power, the Government may deprive an individual of his property, including water rights, without making compensation, if the resulting injury is not substantial, or is only temporary. But if the injury is material and permanent, the property must be taken by condemnation, with proper compensation to the owner; for private property rights are protected by the Constitution.

This principle is clear -- that water flowing in all upstream watercourses constitutes a part of the supply of downstream prior appropriators. The appropriation right, no matter how far down the main channel of a stream, is protected by law throughout the watershed, as against diversions by those with junior rights.



Right of the United States to capture and control diffused  
surface waters on the public domain

Diffused surface waters, not collected in a natural watercourse, are subject to different rules of law in some States from those governing waters in natural channels.

Generally speaking, diffused surface waters belong to the owners of the land on which they occur, and are subject to capture and utilization by such owners.

In certain Western States, the courts have held that the landowner owns the diffused surface waters on his land. New Mexico may be cited as an example.

In other Western States -- probably the majority of them -- this matter has not been passed upon by the courts, and its status therefore is uncertain. For example, in a State where the courts have gone far in correlating water rights, as in Colorado, it is not known what they would say to an interference on the watershed with diffused surface waters proved to be depleting the water supply of prior appropriators below.

It is believed that considerations of public welfare will carry weight in inducing the courts, in States where the landowner's right to capture surface waters is now uncertain, not to extend the appropriative principle to situations to which the laws and courts decisions have not yet extended them, provided the case arises in connection with a Governmental program on the public domain clearly shown to be in the public interest.





## Adjustment of conflicting interests

It is inevitable that all interests affected by the use of waters within a drainage area must sooner or later be reconciled.

Water users on a stream system are interested in having the stream flow in the manner in which it was flowing when they initiated their rights to the water. This is a part of their fundamental water right.

Owners of the public domain are interested in protection and development of those lands, so that they can make the best use of them.

The public welfare is best served by a coordinated use of the drainage area which will produce the best results all around. A regulated grazing of the watershed should do two things:

- (1) Make for a better long-time use of the range land for range purposes.
- (2) Make for a better water supply for the downstream users, by decreasing erosion and waste of the soil cover, and improving the ground storage of precipitation in the upper watershed lands.

In spite of the ultimate benefit to present water users, conflicts readily foreseen at the inception of a range-control program are:

Appropriators of the stream flow will contest any action which results in so altering the flow as to yield them less water when they need it for present farm programs.

Appropriators of flood waters for storage will contest any action which serves to transform flood flow into normal flow and thus depreciate the value of their flood-water rights. Their constitutional





objection will be that the Government is taking property from one individual and giving it to another. This is a very important element of any program which will involve changes in present flows of appropriated streams.

#### Practical methods of procedure

Several courses are open for consideration in the reconciliation of conflicting interests:

(1) Districts may be organized, if the States so enact laws, covering entire watersheds and designed to adjust water rights in conformity with programs for watershed conservation. Assessments may be made of benefits and damages resulting from the watershed-control program. There is ample precedent for public corporations of this type, in the irrigation and drainage district laws of the States. Public lands of the United States may be so included, if Congress gives its consent, as it has done in the Smith Act in case of irrigation districts (39 Stat. 506, August 11, 1916).

(2) Where it can be shown clearly that the ultimate result will be an improvement in value of water rights, present holders may stipulate their consent. The difficulty here will be education and the personal equation.

(3) Congress may provide by law for compensation to parties injured.

Some course of action will be necessary in most cases, for a range-control program which affects the flow of water in streams will conflict, sooner or later, with water rights on those streams. Holders of vested water rights must be taken into consideration in any program involving their watershed.



